

## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents  
 United States Patent and Trademark  
 Office  
 Box PCT  
 Washington, D.C. 20231  
 ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

<b>Date of mailing (day/month/year)</b> 18 October 2000 (18.10.00)	
<b>International application No.</b> PCT/US00/02837	<b>Applicant's or agent's file reference</b> 344.07-PCT
<b>International filing date (day/month/year)</b> 03 February 2000 (03.02.00)	<b>Priority date (day/month/year)</b> 05 February 1999 (05.02.99)
<b>Applicant</b> MEYER, Darrell	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:  
 01 September 2000 (01.09.00)

☐ in a notice effecting later election filed with the International Bureau on:  
 \_\_\_\_\_

2. The election ☒ was  
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No.: (41-22) 740.14.35	Authorized officer  Zakaria EL KHODARY  Telephone No.: (41-22) 338.83.38
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## PATENT COOPERATION TREATY

09/890514<sup>15</sup>

## PCT

REC'D 09 FEB 2001

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

WIPO PCT

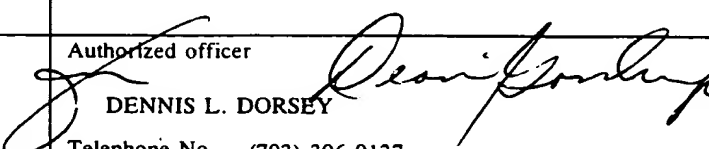
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 344.07-PCT	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US00/02837	International filing date (day/month/year) 03 FEBRUARY 2000	Priority date (day/month/year) 05 FEBRUARY 1999
International Patent Classification (IPC) or national classification and IPC Please See Supplemental Sheet.		
Applicant MEYER, DARRELL		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets.
- ☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of 3 sheets.

## 3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of report with regard to novelty, inventive step or industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability: citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand  01 SEPTEMBER 2000	Date of completion of this report  30 NOVEMBER 2000
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer  DENNIS L. DORSEY
Facsimile No. (703) 305-3230	Telephone No. (703) 306-9137

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/02837

**I. Basis of the report****1. With regard to the elements of the international application:\***

- ☐ the international application as originally filed
- ☒ the description:  
pages 1-14 , as originally filed  
pages NONE , filed with the demand  
pages NONE , filed with the letter of \_\_\_\_\_
- ☒ the claims:  
pages NONE , as originally filed  
pages NONE , as amended (together with any statement) under Article 19  
pages 15-17 , filed with the demand  
pages NONE , filed with the letter of \_\_\_\_\_
- ☒ the drawings:  
pages 1-12 , as originally filed  
pages NONE , filed with the demand  
pages NONE , filed with the letter of \_\_\_\_\_
- ☒ the sequence listing part of the description:  
pages NONE , as originally filed  
pages NONE , filed with the demand  
pages NONE , filed with the letter of \_\_\_\_\_

**2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.**

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

**3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:**

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

**4. ☒ The amendments have resulted in the cancellation of:**

- ☒ the description, pages NONE
- ☒ the claims, Nos. NONE
- ☒ the drawings, sheets/fig NONE

**5. ☐ This report has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\***

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\*Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/02837

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. statement**

Novelty (N)	Claims <u>1-28</u>	YES
	Claims <u>NONE</u>	NO
Inventive Step (IS)	Claims <u>1-28</u>	YES
	Claims <u>NONE</u>	NO
Industrial Applicability (IA)	Claims <u>1-28</u>	YES
	Claims <u>NONE</u>	NO

**2. citations and explanations (Rule 70.7)**

Claims 1-28 meet the criteria set out in PCT Article 33(2)-(4), because the prior art does not teach or fairly suggest the chord attached at the vertex with five sided perimeter and parallel top and bottom sides to the flat web.

----- NEW CITATIONS -----

NONE

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/02837

**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

Sheet 10

**CLASSIFICATION:**

The International Patent Classification (IPC) and/or the National classification are as listed below:

IPC(7): E04C 3/02 and US Cl.: 52/693, 696, 729.5, 737.1, 731.7, 737.6, 729.1, 729.3, 653.1, 702, 650.3; 29/897.35, 897.31

## PCT REQUEST

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Original (for SUBMISSION) - printed on 03.02.2000 03:43:52 PM

344.07-PCT

0	<b>For receiving Office use only</b>	
0-1	International Application No.	
0-2	International Filing Date	
0-3	Name of receiving Office and "PCT International Application"	
0-4	<b>Form - PCT/RO/101 PCT Request</b>	
0-4-1	Prepared using	PCT-EASY Version 2.90 (updated 01.01.2000)
0-5	<b>Petition</b> The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty	
0-6	<b>Receiving Office (specified by the applicant)</b>	United States Patent and Trademark Office (USPTO) (RO/US)
0-7	<b>Applicant's or agent's file reference</b>	344.07-PCT
I	<b>Title of invention</b>	WEIGHT BEARING SYSTEMS AND METHODS RELATING TO SAME
II	<b>Applicant</b>	
II-1	This person is:	applicant and inventor
II-2	Applicant for	all designated States
II-4	Name (LAST, First)	MEYER, Darrell
II-5	Address:	1236 N. Deerpark, #70 Fullerton, CA 92831 United States of America
II-6	State of nationality	US
II-7	State of residence	US
II-8	Telephone No.	714-630-9692
II-9	Facsimile No.	714-630-0880
IV-1	<b>Agent or common representative; or address for correspondence</b> The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:	agent
IV-1-1	Name (LAST, First)	ZOETEWEEY, David
IV-1-2	Address:	Fish & Associates, LLP 1440 N. Harbor Blvd. Suite 706 Fullerton, CA 92835 United States of America
IV-1-3	Telephone No.	714-449-2337
IV-1-4	Facsimile No.	714-449-2339
IV-1-5	e-mail	DZoetewey@fishandassociates.com

## PCT REQUEST

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344.07-PCT

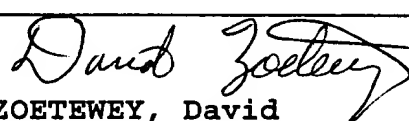
Original (for SUBMISSION) - printed on 03.02.2000 03:43:52 PM

V	<b>Designation of States</b>	
V-1	Regional Patent (other kinds of protection or treatment, if any, are specified between parentheses after the designation(s) concerned)	<p>AP: GH GM KE LS MW SD SL SZ TZ UG ZW and any other State which is a Contracting State of the Harare Protocol and of the PCT</p> <p>EA: AM AZ BY KG KZ MD RU TJ TM and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT</p> <p>EP: AT BE CH&amp;LI CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE and any other State which is a Contracting State of the European Patent Convention and of the PCT</p> <p>OA: BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG and any other State which is a member State of OAPI and a Contracting State of the PCT</p>
V-2	National Patent (other kinds of protection or treatment, if any, are specified between parentheses after the designation(s) concerned)	<p>AE AL AM AT (patent and utility model)</p> <p>AU AZ BA BB BG BR BY CA CH&amp;LI CN CR CU</p> <p>CZ (patent and utility model) DE (patent and utility model) DK (patent and utility model) DM EE (patent and utility model) ES FI (patent and utility model)</p> <p>GB GD GE GH GM HR HU ID IL IN IS JP KE</p> <p>KG KP KR KZ LC LK LR LS LT LU LV MA MD</p> <p>MG MK MN MW MX NO NZ PL PT RO RU SD SE</p> <p>SG SI SK (patent and utility model) SL</p> <p>TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW</p>
V-5	<p><b>Precautionary Designation Statement</b></p> <p>In addition to the designations made under items V-1, V-2 and V-3, the applicant also makes under Rule 4.9(b) all designations which would be permitted under the PCT except any designation(s) of the State(s) indicated under item V-6 below. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit.</p>	
V-6	<b>Exclusion(s) from precautionary designations</b>	NONE
VI-1	<b>Priority claim of earlier national application</b>	
VI-1-1	Filing date	05 February 1999 (05.02.1999)
VI-1-2	Number	60/118,952
VI-1-3	Country	US

## PCT REQUEST

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VI-2	Priority claim of earlier national application		
VI-2-1	Filing date	31 March 1999 (31.03.1999)	
VI-2-2	Number	09/282,306	
VI-2-3	Country	US	
VI-3	Priority document request The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) identified above as item(s):	VI-1, VI-2	
VII-1	International Searching Authority Chosen	United States Patent and Trademark Office (USPTO) (ISA/US)	
VIII	Check list	number of sheets	electronic file(s) attached
VIII-1	Request	4	-
VIII-2	Description	14	-
VIII-3	Claims	5	-
VIII-4	Abstract	1	abstract.txt
VIII-5	Drawings	12	-
VIII-7	TOTAL	36	
VIII-8	Accompanying items	paper document(s) attached	electronic file(s) attached
VIII-8	Fee calculation sheet	✓	-
VIII-16	PCT-EASY diskette	-	diskette
VIII-18	Figure of the drawings which should accompany the abstract	19	
VIII-19	Language of filing of the international application	English	
IX-1	Signature of applicant or agent		
IX-1-1	Name (LAST, First)	ZOETEWY, David	

## FOR RECEIVING OFFICE USE ONLY

10-1	Date of actual receipt of the purported international application	
10-2	Drawings:	
10-2-1	Received	
10-2-2	Not received	
10-3	Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application	
10-4	Date of timely receipt of the required corrections under PCT Article 11(2)	
10-5	International Searching Authority	ISA/US
10-6	Transmittal of search copy delayed until search fee is paid	



**PCT REQUEST**

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344.07-PCT

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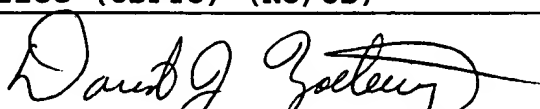
11-1	Date of receipt of the record copy by the International Bureau	
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**PCT (ANNEX - FEE CALCULATION SHEET)**

344.07-PCT

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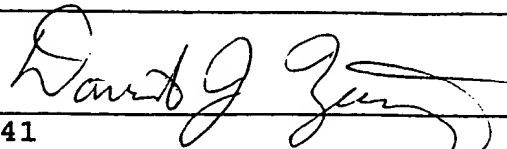
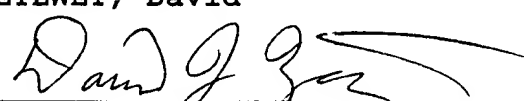
(This sheet is not part of and does not count as a sheet of the international application)

0	<b>For receiving Office use only</b>		
0-1	International Application No.		
0-2	Date stamp of the receiving Office		
0-4	<b>Form - PCT/RO/101 (Annex)</b>		
0-4-1	PCT Fee Calculation Sheet Prepared using	PCT-EASY Version 2.90 (updated 01.01.2000)	
0-9	Applicant's or agent's file reference	344.07-PCT	
2	Applicant	MEYER, Darrell	
12	<b>Calculation of prescribed fees</b>	fee amount/multiplier	total amounts (USD)
12-1	Transmittal fee T	⇒	240
12-2	Search fee S	⇒	700
12-3	International fee Basic fee (first 30 sheets) b1	427	
12-4	Remaining sheets	6	
12-5	Additional amount (X)	10	
12-6	Total additional amount b2	60	
12-7	b1 + b2 = B	487	
12-8	Designation fees Number of designations contained in international application	83	
12-9	Number of designation fees payable (maximum 8)	8	
12-10	Amount of designation fee (X)	92	
12-11	Total designation fees D	736	
12-12	PCT-EASY fee reduction R	-132	
12-13	Total International fee (B+D-R) I	⇒	1,091
12-14	Fee for priority document Number of priority documents requested	2	
12-15	Fee per document (X)	15	
12-16	Total priority document fee P	⇒	30
12-17	<b>TOTAL FEES PAYABLE (T+S+I+P)</b>	⇒	2,061
12-19	Mode of payment	cheque	
12-20	Deposit account instructions The receiving Office:	United States Patent and Trademark Office (USPTO) (RO/US)	
12-20-2	is hereby authorized to charge any deficiency or credit any over-payment in the total fees indicated above to my deposit account	✓ 	

## PCT (ANNEX - FEE CALCULATION SHEET)

344.07-PCT

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12-20-3	is hereby authorized to charge the fee for preparation and transmittal of the priority document to the International Bureau of WIPO to my deposit account	✓ 
12-21	Deposit account No.	500341
12-22	Date	03 February 2000 (03.02.2000)
12-23	Name and signature	ZOETEWEEY, David 

## VALIDATION LOG AND REMARKS

13-2-6	Validation messages Contents	Yellow! The power of attorney or a copy of the general power of attorney will need to be furnished unless all applicants sign the request form.
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Practitioner's Docket No. 344.07-PCT

IN THE INTERNATIONAL BUREAU (WIPO)

PCT/US00/02837	03 February 2000	05 February 1999
International Application Number	International Filing Date	International Earliest Priority Date

Title of Invention: **Weight Bearing Systems and Methods Relating To Same**  
Applicant: **Meyer, Darrell**

International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20  
Switzerland

**LETTER FOR PCT ARTICLE 19 AMENDMENT OF CLAIMS  
(PCT SECTION 205)**

1. Applicant herewith submits replacement sheets(s) number(ed) **15 - 18** to replace sheet(s) number(ed) **15 - 20**, originally filed for this application.
2. In respect of each claim appearing in the international application based on the replacement sheets submitted herewith, and in accordance with PCT Section 205, the following claim(s) is/are:
  - (i) unchanged: claim(s) **3-5, 7-9**
  - (ii) cancelled: claim(s) **0**
  - (iii) new: claim(s) **0**
  - (iv) replacement of one or more claims as filed, as follows: **1, 2, 6, 10-28**
  - (v) the result of the division of one or more claims as filed, as follows: **0**

Dear Sir:

In response to the Search Report dated 05 July, 2000, claim pages are **15 - 19** are being replaced by substitute pages **15 - 17**. Originally filed claims **1, 2, 6, and 10-14** are replaced with claims deemed allowable in the US prosecution (09/282306). Originally filed claims **15 - 28** are entirely rewritten. There is no new matter added by virtue of the amendments.

## **REMARKS**

The Search Report designated five references as being relevant to anticipation or obviousness. These references are addressed below *serialim*.

### **Rafter (US Patent 2092472)**

The Office considers Rafter to anticipate previously filed claims 1-9. The applicant resolved this issue in the corresponding US utility patent application, serial no. 09/282306, which is now allowed. Identical amendments are being made 1 herein. In particular, the rejected claims all require that the chord have at least five sides, and apparently the Office reads that limitation onto elements 5, 6, 7, 8, and 9 in Rafter. The applicant disagrees with the Office in that regard, since "sides" 5 and 9 are really the same side. In any event, these rejections are clearly overcome herein by amendment to the claim 1 specifying that there are at least five "mutually non-coplanar" sides. Rafter fails to satisfy that limitation because "sides" 5 and 9 are coplanar." Claims 2-9 are, of course, amended by virtue of their dependence on claim 1.

### **Baroni (US 3241285)**

Claims 10-12 were deemed anticipated by Baroni (US 3241285). The applicant disagrees with these rejections as well, because claims 10-12 necessarily include the limitations of claim 1, which require that the chord have a polygonal cross-sectional shape. Baroni does not disclose any embodiments having a chord (channel in Baroni's terminology) with a polygonal cross-sectional shape. In any event, the rejections are clearly overcome herein by amendment to claim 1 specifying that the web is substantially flat. Baroni goes to great length to specify that his web is concave (see Baroni spec. at col. 4, lines 3-47). Claims 10-12 are amended by virtue of their dependence on claim 1.

### **Slater (US 5761873)**

Claims 13-28 were deemed anticipated by Slater (US 5761873). Claims 13-14 are amended herein to depend on claim 1, and are clearly not anticipated by Slater. Claims 15-24 and 27-28 all include limitations directed to tabs, which are not taught, suggested, or motivated by Slater. Claims 15-24 and 27-28 also include limitations directed to stiffening members positioned between adjacent pairs of tabs. Obviously, without tabs Slater cannot anticipate or render obvious the limitations regarding positions of stiffening members.

Claim 16 recites that the back is continuous with the two legs, forming an elongated "C" shape. Slater does not have a back continuous with two legs.

Claims 21, 22, and 24 all recite a diamond shaped cutout. Slater does not teach, suggest, or motivate one skilled in the art to use a diamond shaped cutout.

**Butland (US 4660799)**

Claims 13-28 were deemed anticipated by Butland (US 4660799). Claims 13-14 are amended herein to depend on claim 1, and are clearly not anticipated by Butland. Claims 15-24 and 27-28 all include limitations directed to pairs of ~~spaced apart pairs of tabs~~, which are not taught, suggested, or motivated by Butland. Claims 15-24 and 26-27 also include limitations directed to ~~cutout stiffening members~~. Butland is completely silent as to cutout stiffening members, even though the term "cutout" is used in a very broad sense in the present application to include holes formed by cutting, punching, or otherwise (see spec, page 10, line 21 *et seq.*). Butland also has the same defect as Slater regarding ~~positioning of the stiffening members between adjacent pairs of tabs~~.

Claims 21, 22, and 24 all recite a diamond shaped cutout. Butland does not teach, suggest, or motivate one skilled in the art to use a diamond shaped cutout.

**Diamond (US 6050831)**


Claims 13-28 were deemed anticipated by Diamond (US 3050831). Claims 13-14 are amended herein to depend on claim 1, and are clearly not anticipated by Diamond. Claims 15-24 and 27-28 all include limitations directed to pairs of ~~spaced apart pairs of tabs~~, which are not taught, suggested, or motivated by Diamond. Diamond also has the same defect as Slater regarding ~~positioning of the stiffening members between adjacent pairs of tabs~~.

Claim 22 recites a four sided diamond shaped cutout. Diamond does not teach, suggest, or motivate one skilled in the art to use a four sided diamond shaped cutout.

**Combinations**

There is no combination of cited references that teaches, suggests, or motivates one of ordinary skill to satisfy all of the elements of the pending claims. None of the references teach any the use of spaced apart pairs of tabs in conjunction with cutouts.

Respectfully submitted,  
Fish & Associates, LLP

A handwritten signature in black ink, appearing to read "Robert D. Fish", is written over a horizontal line.

Robert D. Fish, Esq.

Fish & Associates, LLP  
1440 N. Harbor Blvd., Suite 706  
Fullerton, CA 92835 USA  
Tel: 714-449-2337  
Fax: 714-449-2339

## CLAIMS

What is claimed is:

1. A weight bearing element comprising:  
5 a substantially flat web; and  
at least one chord defining a perimeter having a polygonal cross-sectional shape with  
at least 5 mutually non-coplanar sides, at least two of which are substantially  
parallel to the web, the chord being connected to the web at at least one vertex  
of an angle of the chord.
- 10 2. The weight bearing element of claim 1 wherein the cross section of the at least one  
chord, excluding any portion in parallel with and connected to the web, has a shape of  
a regular or irregular pentagon.
3. The weight bearing element of claim 1 further comprising a fill material in the cavity  
of at least one of the at least one chord.
- 15 4. The weight bearing element of claim 1 wherein the at least one chord consists of two  
substantially parallel chords coupled to opposite sides of the web.
5. The weight bearing element of claim 4 wherein the chord further comprises at least 5  
planar sides, each side corresponding to one side of the closed multi-sided figure of  
the cross-sectional shape of the chord.
- 20 6. The weight bearing element of claim 5 wherein the number of sides is at least 6.
7. The weight bearing element of claim 5 wherein each of the at least 5 planar sides is  
less than N inches thick where N is one of 1, .75, .5, .25, .125, and .1.
8. The weight bearing element of claim 5 wherein each of the at least 5 planar sides  
comprises X gauge steel where X is one of 20 and 18.



9. The weight bearing element of claim 5 formed by roll forming a single sheet of material into the web and at least one chord.
10. The weight bearing element of claim 1 wherein the chord is fabricated from a single continuous sheet.
- 5 11. The weight bearing element of claim 1 wherein the polygonal cross-sectional has five sides.
12. The weight bearing element of claim 1 wherein the chord has a height and a width, such that the height is greater than the width.
- 10 13. The weight bearing element of claim 1 wherein the web includes a plurality of openings having flanges formed in a trapezoidal pattern.
14. The weight bearing element of claim 13 wherein the web includes a plurality of punched out openings having flanges formed in a trapezoidal pattern.
15. A weight bearing element comprising:  
an elongated back connected to two legs;  
15 the back including a plurality of pairs of tabs spaced apart at a standard joist spacing;  
each of the plurality of pairs of tabs comprising an upper tab spaced apart from a lower tab;  
the back further including a plurality of stiffening members, each of which is  
positioned between an adjacent set of the pairs of tabs, and each of which  
20 comprises a cutout with a plurality of reinforced sides.
16. The weight bearing element of claim 15 wherein the back is continuous with the two legs, forming an elongated "C" shape.
17. The weight bearing element of claim 15 wherein the back is at least 8.5 inches high.
18. The weight bearing element of claim 15 wherein the standard joist spacing is an  
25 integer multiple of 8 inches.

19. The weight bearing element of claim 15 wherein the upper tab and the lower tab of at least one of the pairs of tabs is spaced apart by at least 8.5 inches.
20. The weight bearing element of claim 15 wherein the standard joist spacing is 8 inches.
21. The weight bearing element of claim 15 wherein the cutout has a diamond shape.
- 5 22. The weight bearing element of claim 24 wherein diamond shape has four sides, two approximately equal angles of no more than 45 degrees, and two approximately equal angles of no more than 135 degrees.
23. The weight bearing element of claim 15 wherein the reinforced sides comprise punched out portions of the back.
- 10 24. The weight bearing element of claim 15 wherein the back and two legs comprise a "C" shape, the back is at least 8.5 inches high, the standard joist spacing is an integer multiple of 8 inches, and the cutout has a diamond shape.
25. The weight bearing element of claim 15 wherein the back and legs comprise a rim band.
- 15 26. A building containing the weight bearing element according to claim 1 as a structural component.
27. A building containing the weight bearing element according to claim 15 as a structural component.
- 20 28. A building containing the weight bearing element according to claim 1 as a structural component and a weight bearing element of claim 15 as a structural component.

## ABSTRACT

The present invention is directed to improved weight bearing elements and methods relating to same. Some such elements are contemplated as having a web, and a chord connected to the web, the chord perimeter having a cross-sectional shape of a closed multi-sided figure having at least 5 sides, at least two of which are substantially parallel to the web. Some members may have chords which have a pentagonal cross sectional shape, and/or may include load transferring members or end-caps. Other elements may comprise a stiffened rim band having die cut tabs and stiffening ribs. Some such elements comprise pairs of die cut tabs positioned along the length of the member at intervals which are a fraction of the distance used in standard joist positioning. Other elements comprise one or more pairs of die cut tabs positioned directly opposite each other such that one tab is adjacent the top of the rim band while the corresponding tab is adjacent the bottom of the rim band. Still other elements may comprise a diamond shape stiffener extruding from the back of the rim band and possibly formed by punching a slot into the back of the rim band and pushing the ends of the slot out from the back so as to form the diamond shape. In some embodiments, the weight bearing elements disclosed herein may be "roll-formed" from a continuous sheet of material such as light gauge galvanized steel. In other embodiments, they may exhibit one or more of the following feature: improved load bearing capacity; lighter weight; reduced material usage; easier to manufacture and/or install; able to be cut to custom lengths.

IN THE INTERNATIONAL BUREAU OF WIPO

International Application Number	International Filing Date	Earliest International Priority Date Claimed
PCT/US00/02837	03 February 2000	05 February 1999

Title Of Invention: **Weight Bearing Systems and Methods Relating To Same**

Applicant(s): **Darrell Meyer**

International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland  
Facsimile No: (41-22) 740.14.35

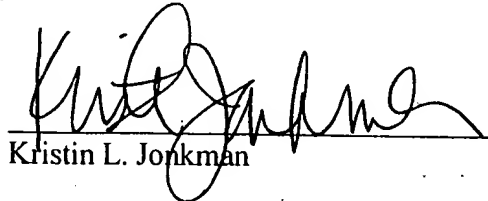
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**Response to Search Report (4 Sheets), Substitute Claims (3 Sheets), and Substitute  
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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application of any patent issuing thereon.

Date: 8/31/00

  
Kristin L. Jonkman

The invention is weight bearing elements and methods relating to same. The elements having a web (200), and a chord (100) connected to the web (200), the chord (100) perimeter having a cross-sectional shape of a closed multi-sided figure having at least 5 sides (110, 120A, 120B, 130A, 130B), at least two of which are substantially parallel to the web (200). The chords may have a pentagonal cross sectional shape, some may have load transferring members (400), end-caps (500), stiffened rim bands (800) having die cut tabs (831, 832) and stiffening ribs (840). Other elements comprise one or more pairs of die cut tabs (831, 832) positioned directly opposite each other such that one tab (831) is adjacent the top of the rim band (800) while the corresponding tab (832) is adjacent the bottom of the rim band (800). Some elements may comprise a diamond shape stiffener (840) extruding from the back of the rim band, formed by punching a slot into the back of the rim band (800). The weight bearing elements may be "roll-formed" from a continuous sheet of material.

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US00/02837

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :E04C 3/02

US CL :Please See Extra Sheet.

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 52/693, 696, 729.5, 737.1, 731.7, 737.6, 729.1, 729.3, 653.1, 702, 650.3; 29/897.35, 897.31

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2,092,472 A (RAFTER) 7 SEPTEMBER 1937 (07.09.37), entire document	1-9
X	US 3,241,285 A (BARONI) 22 MARCH 1966 (22.03.66), entire document.	10-12
A	US 1,924,880 A (RAGSDALE) 29 AUGUST 1933 (29.08.33), entire document.	1-12
X	US 5,761,873 A (SLATER) 09 JUNE 1998 (09.06.98), entire document.	13-28
X	US 4,660,799 A (BUTLAND) 28 APRIL 1987 (28.04.87), entire document.	13-28
X	US 3,050,831 A (DIAMOND) 28 AUGUST 1962 (28.08.62), entire document.	13-28

☒ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

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Date of the actual completion of the international search

19 MAY 2000

Date of mailing of the international search report

05 JUL 2000

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Commissioner of Patents and Trademarks  
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Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

DENNIS L. DORSEY

Telephone No. (703) 306-9137

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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2,007,898 A (RAGSDALE) 09 JULY 1935 (09.07.35), entire document.	1-12
A	US 1,924,881 A (RAGSDALE) 29 AUGUST 1933 (29.08.33), entire document.	1-12
A	US 2,167,835 A (GREULICH) 01 AUGUST 1939 (01.08.39), entire document.	1-12
A	US 2,029,645 A (WAUGH) 04 FEBRUARY 1936 (04.02.36), entire document.	1-12



INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US00/02837

A. CLASSIFICATION OF SUBJECT MATTER:

US CL :

52/693, 696, 729.5, 737.1, 731.7, 737.6, 729.1, 729.3, 653.1, 702, 650.3; 29/897.35, 897.31